UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,641	11/13/2003	Kevin J. Cummings	EH-11005 (03-539)	1649

34704 7590 12/04/2006

BACHMAN & LAPOINTE, P.C.
900 CHAPEL STREET
SUITE 1201
NEW HAVEN, CT 06510

EXAMINER	
VERDIER, CHRISTOPHER M	

ART UNIT	PAPER NUMBER
3745	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,641	CUMMINGS ET AL.	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12-15 and 20-22* is/are allowed.

6)☒ Claim(s) *1,5,6,9,11,17,19 and 23-26* is/are rejected.

7)☒ Claim(s) *2-4,7,8,10,16 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11-13-03, 5-31-05* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Applicant's Amendment dated September 6, 2006 has been carefully considered but is non-persuasive. Claims 1-26 are pending. Claim 23 has been amended to correct the informality set forth in the Office action mailed June 6, 2006.

Applicant has argued that amended independent claims 1, 9, 23, and 24 define over Honda 6,092,987, because the amended claims recite that the structural case extends from the aft joint fixedly attaching the structural case to the structural hub to a fore joint fixedly attaching the structural case to a joined one of the shroud rings. This argument has been carefully considered and is persuasive. With regard to Applicant's argument that the motivation to combine Honda 6,092,987 and Eleftheriou 6,755,025 is insufficient, the examiner disagrees for the reasons set forth below. However, since amended independent claims 1, 9, 23, and 24 define over Honda 6,092,987, this is a moot point.

Applicant has argued concerning the rejection of claims 1, 5-6, 9, 17, 19, and 23-26 under 35 U.S.C. 103(a) as being unpatentable over Chlus 6,802,691 in view of Eleftheriou 6,755,025 and Honda 6,092,987 that the motivation to combine the references is insufficient, because the modulation of bleed air can be inherently achieved by bleed valves generally including those of the prior art, such as in Chlus, and that this function does not suggest the need for any modification, let alone any modification from Eleftheriou. Applicant has further argued that there has been no showing that one of ordinary skill in the art would regard Chlus as suffering a deficiency for which any solution would be found in Eleftheriou. The examiner respectfully disagrees. As Applicant has stated, the modulation of bleed air can be inherently achieved by

bleed valves generally including those of the prior art. 35 U.S.C. 103(a) states that a patent may not be obtained if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. It is the Office position that applying a conventional bleed valve, such as the bleed valve disclosed by Eleftheriou, to the gas turbine engine arrangement of Chlus, would be obvious to a person of ordinary skill in the art, and does not fulfill the patentability requirements of 35 U.S.C. 103(a). Eleftheriou defines the plural bleed ports 14 to the bleed plenum 15, with the bleed flowpath extending sequentially in a downstream direction through the bleed ports, into the bleed plenum, and out through the valve 16/22, with the bleed plenum being an annular plenum, for the purpose of allowing for modulating bleed air when stall or surge occurs.

With regard to Applicant's arguments that the claims define over the combination of Chlus and Eleftheriou, because Eleftheriou involves a structurally different environment which involves bleed along an upstream portion of a centrifugal high pressure compressor, while the arrangement of Chlus differs in both type and location and pertains to the downstream end of an axial low pressure compressor, these arguments are respectfully not persuasive. Eleftheriou teaches the general bleed arrangement of the plural bleed ports 14 leading to a bleed plenum 15, with a bleed flowpath extending sequentially in a downstream direction through the bleed ports, into the bleed plenum, and out through a valve 16/22. Irrespective of whether the compressor is a high pressure compressor versus a low pressure compressor, or an axial compressor versus a centrifugal compressor, one of ordinary skill in the art would have readily recognized the

applicability of the teachings of Eleftheriou to a low pressure axial compressor, such as the one disclosed by Chlus, since Eleftheriou teaches the desirability of modulating bleed air when stall or surge occurs, and it is considered to be both obvious and desirable to modulate the bleed air in the compressor, whether it is a high pressure centrifugal compressor or a low pressure axial compressor. It is also respectfully pointed out that the claims do not specify the type of compressor, although for the reasons above Eleftheriou is applicable to different types of compressors. With regard to Applicant's argument that elements 14 in Eleftheriou are asserted as offtake ducts, but have no structure beyond that inherent in a port, elements 14 still function as offtake ducts.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5-6, 9, 17, 19, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chlus 6,802,691 in view of Eleftheriou 6,755,025 and Honda 6,092,987. Chlus (please refer to the enlargement of figure 2 at the end of this action) discloses a gas turbine engine comprising a fan 12, a compressor 14 along a core flow path 16 and having a plurality of rows of unnumbered blades in figure 1, a plurality of rows of unnumbered vanes in figure 1, and a plurality of shroud rings A, B, a bleed one B of which defines a bleed port C, and a structural hub 70 downstream of the shroud rings and secured relative to the shroud rings (Note that the structural hub 70 is inherently secured to some portion of the engine, because high pressure working fluid passes through the core flow path and the structural case shown generally at 20 rests on and moves about the structural hub, therefore the structural hub 70 must be secured to some portion of the engine to prevent downstream movement of the structural hub. Note also that the phrase "secured relative to the shroud rings" does not require that the structural hub 70 is secured to the shroud rings, but only that it is secured relative to the shroud rings.), a structural case shown generally at 20 extending from an aft joint E fixedly attaching the structural case to the structural hub 70 via an unnumbered bolt to a fore joint F fixedly attaching the structural case to a joined one of the shroud rings B (by virtue of the provision of the bolt and the abutting contact between the structural case 20 and the joined one of the shroud rings B) and having a valve port 20, at least a portion of the structural case extending structurally between the fore and aft joints, and a valve element 24 shiftable between a first condition in which the valve element

blocks communication through the valve port, and a second condition in which the valve element does not block the communication. The valve element is shiftable via combined circumferential rotation and longitudinal translation (note that the term "is shiftable" is a recitation of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963)). The valve element carries an outboard aft seal 44 and an inboard fore seal 48 for sealing with the structural case in the first condition. At least a portion of the structural case (the rear portion) extends as a continuous piece between the fore and aft joints. The valve port 20 extends to an outboard plenum near 66. An unnumbered bleed offtake duct extends outboard from the bleed port C.

However, Chlus does not disclose that the bleed shroud ring B defines plural bleed ports to a bleed plenum, with a bleed flowpath extending sequentially in a downstream direction through the bleed ports, into the bleed plenum, and through the valve port 20 (claims 1, 9, and 23), does not disclose that the bleed plenum is an annular plenum (claims 17 and 19), does not disclose that the bleed shroud ring B defines plural bleed ports to a bleed plenum, with a bleed flowpath extending in a downstream direction from the bleed ports into the bleed plenum (claim 24), and does not disclose that the bleed plenum is a common annular plenum (claim 25). Chlus

does not disclose that the valve port 20 is plural valve ports (claims 1, 9, 23, and 24), and does not disclose that the bleed offtake duct is plural bleed offtake ducts (claim 26).

Eleftheriou 6,755,025 (figure 3) shows a bleed valve arrangement whereby a bleed shroud ring 13 defines plural bleed ports 14 to a bleed plenum 15, with a bleed flowpath extending sequentially in a downstream direction through the bleed ports, into the bleed plenum, and out through a valve 16/22, with the bleed plenum being an annular plenum, for the purpose of allowing for modulating bleed air when stall or surge occurs. The bleed shroud ring 13 defines plural bleed ports 14 to a bleed plenum 15, with a bleed flowpath extending in a downstream direction from the bleed ports into the bleed plenum, with the bleed plenum being a common annular plenum, for the purpose of allowing for modulating bleed air when stall or surge occurs. Plural bleed offtake ducts at 14 are provided for the purpose of modulating bleed air when stall or surge occurs.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the gas turbine engine of Chlus such that the bleed shroud ring B defines plural bleed ports to a bleed plenum, with a bleed flowpath extending sequentially in a downstream direction through the bleed ports, into the bleed plenum, and through the valve port 20, such that the bleed plenum is an annular plenum, and such that the bleed shroud ring B shroud ring defines plural bleed ports to a bleed plenum, with a bleed flowpath extending in a downstream direction from the bleed ports into the bleed plenum, with the bleed plenum being a

common annular plenum, and such that the bleed offtake duct is plural bleed offtake ducts, as taught by Eleftheriou.

The modified gas turbine engine of Chlus shows all of the claimed subject matter except for the valve port 20 being plural valve ports.

Honda (figure 2) shows a gas turbine engine bleed valve system, whereby plural valve ports 30 are provided, for the purpose of allowing working fluid to be bypassed from the compressor flow path through multiple ports.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified gas turbine engine of Chlus such that the valve port 20 is plural valve ports, as taught by Honda.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chlus 6,802,691 and Eleftheriou 6,755,025 and Honda 6,092,987 as applied to claim 9 above, and further in view of Malmborg 2005/0008486. The modified gas turbine engine of Chlus shows all of the claimed subject matter except for the structural hub 70 carrying plural fan exit guide vanes.

Malmborg shows a gas turbine engine having a compressor with a structural case 76 that carries fan exit guide vanes 77, for the purpose of guiding working fluid from the compressor.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified gas turbine engine of Chlus such that the structural hub carries plural fan exit guide vanes, as taught by Malmborg, for the purpose of guiding working fluid from the compressor.

Allowable Subject Matter

Claims 12-15 and 20-22 are allowed.

Claims 2-4, 7-8, 10, 16, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.V.
November 21, 2006

Christopher Verdier
Primary Examiner
Art Unit 3745